

Patent Claims:

1 – 10 (canceled)

11. (new) A method for identifying defects in a fuel injection system wherein the fuel injection system includes a high-pressure pump, a fuel accumulator, a fuel pressure control valve, and a pressure sensor for recording the pressure prevailing in at least one fuel accumulator, comprising:

identifying the occurrence of at least one defect in the fuel injection system by recording a pressure in the fuel accumulator that is too low and using a high-frequency component of a first signal characterizing the pressure course in the fuel accumulator over a time in order to isolate the source of the defect;

comparing the pressure determined in at least one fuel accumulator with a desired pressure in a low-pressure area of the fuel injection system or a pressure that is actually present in the low-pressure area of the fuel injection system; and

concluding that there is a defect in the low-pressure area if the pressure determined in the fuel accumulator is lower than the desired pressure, or concluding that there is a defect in the drive of the high-pressure pump if the pressure determined in the fuel accumulator is lower than the pressure that is actually present in the low-pressure area.

12. (new) The method according to claim 11, wherein the first signal is lowpass-filtered so that a lowpass-filtered second signal is generated, and a third signal is generated as the absolute difference between the first signal and the second signal and the third signal is compared with a predefined threshold value and depending on the comparison, the source of the defect is isolated.

13. (new) The method according to claim 12, wherein it is concluded that there is a defect in the high-pressure pump if the third signal exceeds the predefined threshold value.

14. (new) The method according to claim 12, wherein it is concluded that there is a defect in the fuel pressure control valve if the third signal falls below the predefined threshold value.

15. (new) The method according to claim 11, wherein the pressure determined in the accumulator is evaluated based on a value measured by a lambda probe arranged in the

exhaust gas flow of an internal combustion engine assigned to a fuel injection pump and it is concluded that there is a defect in the pressure sensor if a plausibility check is negative.

16. (new) The method according to claim 11, wherein the comparison of the pressure determined in the fuel accumulator with the desired pressure or the pressure that is actually present in the low-pressure area of the fuel injection system takes place before using the high-frequency component of the first signal.

17. (new) The method according to claim 11, wherein the plausibility evaluation for determining the functionality of the pressure sensor is accomplished before the pressure determined in the fuel accumulator is compared with a desired pressure or the pressure that is actually present in a low-pressure area of the fuel injection system.

18. (new) A device for identifying defects in a fuel injection system, the fuel injection system having a high-pressure pump, a fuel accumulator, a fuel pressure control valve, and a pressure sensor for recording the pressure prevailing in the fuel accumulator, wherein the device is adapted to identify defects in the fuel injection system by a method, comprising:

identifying the occurrence of a defect in the fuel injection system by recording a pressure in the fuel accumulator which is too low and use a high-frequency component of a first signal characterizing the pressure course in the fuel accumulator over time in order to isolate the source of the defect;

comparing the pressure determined in the fuel accumulator with a desired pressure in a low-pressure area of the fuel injection system or a pressure that is actually present in the low-pressure area of the fuel injection system; and

concluding that there is a defect in the low-pressure area if the pressure determined in the fuel accumulator is lower than the desired pressure, or to conclude that there is a defect in the drive of the high-pressure pump if the pressure determined in the fuel accumulator is lower than the pressure that is actually present in a low-pressure area.

19. (new) A vehicle capable of identifying defects in a fuel injection system, the fuel injection system having a high-pressure pump, a fuel accumulator, a fuel pressure control valve and a pressure sensor for recording the pressure prevailing in the fuel accumulator, wherein the device is adapted to identify defects in the fuel injection system by a method,

comprising:

identifying the occurrence of a defect in the fuel injection system by recording a pressure in the fuel accumulator which is too low and use a high-frequency component of a first signal characterizing the pressure course in the fuel accumulator over time in order to isolate the source of the defect;

comparing the pressure determined in the fuel accumulator with a desired pressure in a low-pressure area of the fuel injection system or a pressure that is actually present in the low-pressure area of the fuel injection system; and

concluding that there is a defect in the low-pressure area if the pressure determined in the fuel accumulator is lower than the desired pressure, or to conclude that there is a defect in the drive of the high-pressure pump if the pressure determined in the fuel accumulator is lower than the pressure that is actually present in a low-pressure area.

20. (new) A diagnostic unit with a device for identifying defects in a fuel injection system of a vehicle and arranged separately from the motor vehicle, wherein the device is adapted to identify defects in the fuel injection system by a method, comprising;

identifying the occurrence of a defect in the fuel injection system by recording a pressure in the fuel accumulator which is too low and use a high-frequency component of a first signal characterizing the pressure course in the fuel accumulator over time in order to isolate the source of the defect;

comparing the pressure determined in the fuel accumulator with a desired pressure in a low-pressure area of the fuel injection system or a pressure that is actually present in the low-pressure area of the fuel injection system; and

concluding that there is a defect in the low-pressure area if the pressure determined in the fuel accumulator is lower than the desired pressure, or to conclude that there is a defect in the drive of the high-pressure pump if the pressure determined in the fuel accumulator is lower than the pressure that is actually present in the low-pressure area.